The cost of the wheat crop, including sowing, keeping clean, reaping, and thrashing, was at the rate of 1*l.* 17*s.* per acre; and of the potato-crop, including breast-ploughing, wheat-stubble, forking land, planting, cleaning, getting-up, and harvesting, 6*l.* 15*s.* 3*d.* per acre, the average being 4*l.* 6*s.* 1½*d.* per acre; while the annual produce realised the sum of 93*l.*, being 69*l.* 5*s.* 6*d.* above the expenses,* or at the rate of 17*l.* 6*s.* 4½*d.* per acre surplus, subject only to deductions for rent and parochial taxes. It must be remarked, that this enormous profit was effected by the sale of a great part of the produce, and not by its consumption on the land, which is the prevailing custom.

As a further proof of the adequate productive powers of the system the writer advocates, he adduces the well-known case of Mrs. Davies Gilbert, of Eastbourne, who, through her benevolent exertions, has succeeded in establishing self-supporting national schools, by receiving rent for the land occupied by the master, who instructs the children in the usual course of education in the morning, and employs them on his land in the afternoon.

Mr. Fardon strenuously recommends that a portion of land should be attached to every country union, to be cultivated by the able-bodied poor, according to the third system, the effect of which would necessarily be to reduce the poor's-rate in every parish where the plan might be carried into effect.

He further suggests, that the redundancy of manufacturing labour might be well turned to account in the cultivation of the soil by spade-husbandry.

MR. LEE'S SAFETY RAILWAY CARRIAGE.

THE object of Mr. Lee's invention is to prevent railway accidents, arising either from the breaking of axles, or from carriages running off the rails. To obtain these important desiderata, Mr. Lee introduces bearings of a different construction to those in

	£	s.	d.	£	s.	d.
* 24 Tons of potatoes at 50*s.*	60	0	0			
80 Bushels of wheat at 7*s.*	28	0	0			
2 Tons of straw at 50*s.*	5	0	0			
				93	0	0
Deduct—						
Manual wages as above detailed, at 4*l.* 6*s.* 1½*d.* per acre	17	4	6			
Seed-potatoes for 2 acres	5	0	0			
Seed-wheat	1	10	0			
				23	14	6
				69	5	6

ordinary use, for the axles of the wheels, and forms each axle in two parts, so arranged as to obtain the requisite stiffness, and at the same time to enable either half of the axle, which may become fractured or otherwise made unfit for use, to be readily removed without disturbing the other or uninjured half.

Another important point is the application of very powerful brakes, to check, when required, the action of all the wheels, though the train may be proceeding at full speed. These brakes are adapted to act simultaneously, as well on the rails on which the wheels run, as on the tires of the wheels themselves, and are therefore called compound brakes, and which may be brought into action in three different ways:—

1. By allowing the collision of the carriages to act on the brakes, by an arrangement of rods, cranks, &c., somewhat as in the ordinary buffers.
2. By a windlass under the control of the guard of each carriage.
3. By the addition to each carriage of a small steam cylinder, the piston of which acts on the system of brakes for the four or six wheels. In this case a continuous steam-pipe runs from the boiler of the engine with a branch to each carriage of the train; the connexions of this pipe being formed, by universal joints, to allow of the train passing round curves.

To prevent the carriages running off the rails Mr. Lee proposes to attach to the underframing of each carriage six wooden cheeks, having metal flanches. In the event of the common axles being broken, and even all the wheels removed from the carriage, the latter cannot run off the rails, as the flanches of the cheeks reach to a level sufficiently below the tops of guard-rails fixed along the line, or, in particular parts, between the usual rails of the way. The projector considers this latter plan to be particularly applicable to the crossing of ravines, rivers, embankments, &c.

PROFESSOR FARADAY'S INVENTION FOR THE PERFECT VENTILATION OF LAMP-BURNERS.

By James Faraday.

In consequence of the injury sustained by the books in the library at the Athenæum Club, amounting almost to the entire destruction of the bindings, and the complaints of the members of the vitiated state of the air in the rooms, causing headache, oppressive breathing, and other unpleasant sensations, Professor Fara-